




ANDRITZ HYDRO

Company Presentation 2011

ANDRITZ HYDRO



ANDRITZ HYDRO is a global supplier of electromechanical systems and services ("From Water to Wire") for hydro power plants. The company is a leader in the world market for hydraulic power generation.

The ANDRITZ GROUP

Overview

Company

- ANDRITZ AG, Graz, Austria (Group headquarters).
- More than 180 production and service sites worldwide.
- Employees: ~ 16,700 worldwide (as of September 30, 2011).

Key figures 2010

- Order intake: 4,132 MEUR.
- Sales: 3,554 MEUR.
- Net income (incl. non-controlling interests): 177 MEUR.
- Equity ratio (as of December 31, 2010): 19.7%.

Products and services




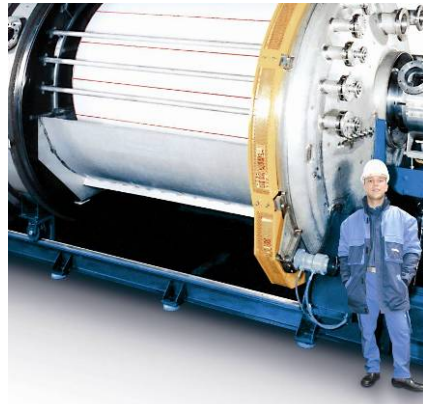

Plants and services for the hydropower, pulp and paper, metals, and other specialized industries (solid/liquid separation, feed and biofuel).



ANDRITZ
Hydro

Company Profile

A world market leader in most business areas

HYDRO	PULP & PAPER	METALS	SEPARATION **	FEED & BIOFUEL
~ 40-45%*	~ 30-35%*	~ 10%*	~ 10%*	~ 5%*
Electromechanical equipment for hydropower plants (mainly turbines and generators); pumps	Systems for the production of all types of pulp and of certain paper grades (tissue, cartonboard)	Systems for the production and processing of stainless steel and carbon steel strips	Systems for mechanical and thermal solid/liquid separation for municipalities and various industries	Systems for the production of animal feed and biomass pellets (wood, straw, etc.)
				

* Long-term average share of the Group's total order intake



** The ENVIRONMENT & PROCESS business area was renamed SEPARATION as of October 1, 2011

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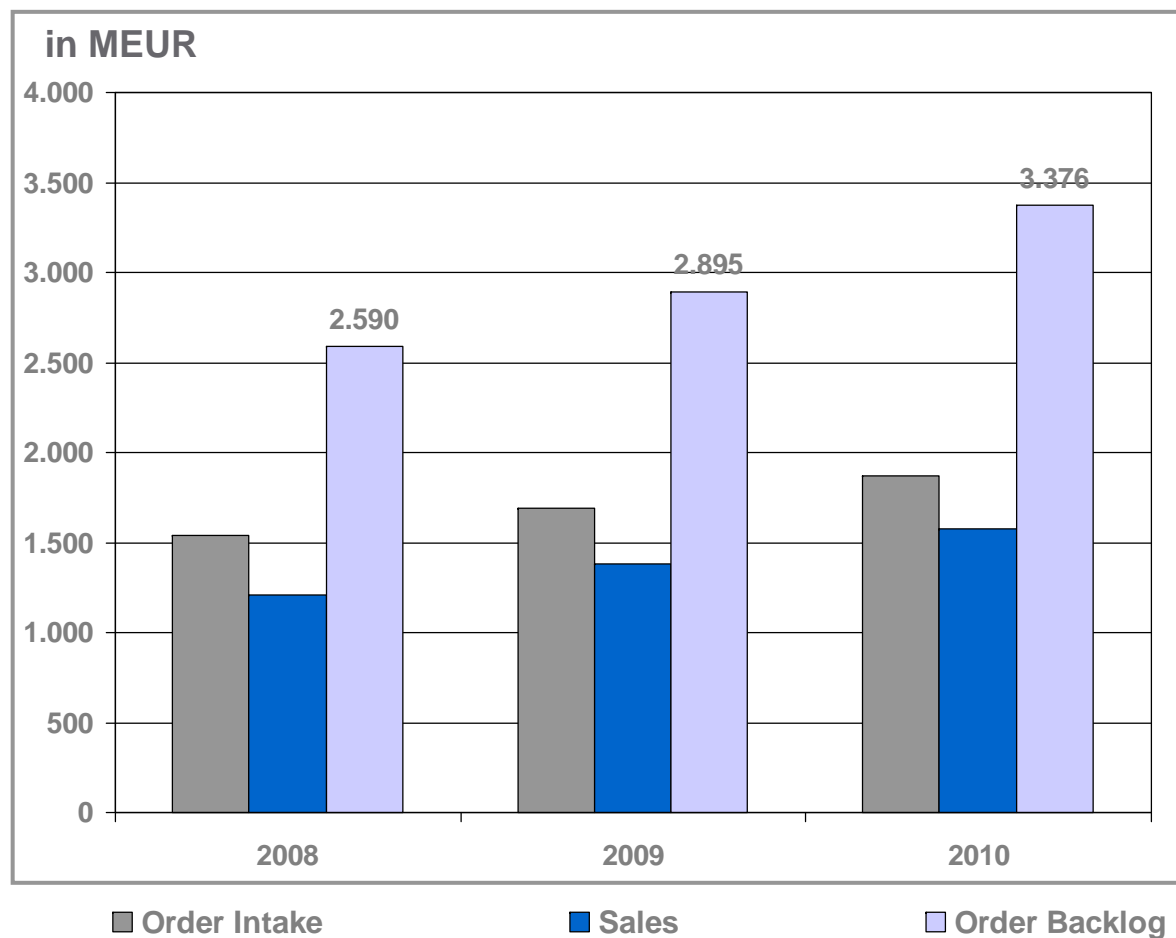
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Organization

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Central Functions	Large Hydro	Compact Hydro	Service & Rehab	Pumps	Generator Turbo
					
					
					

Facts and Figures



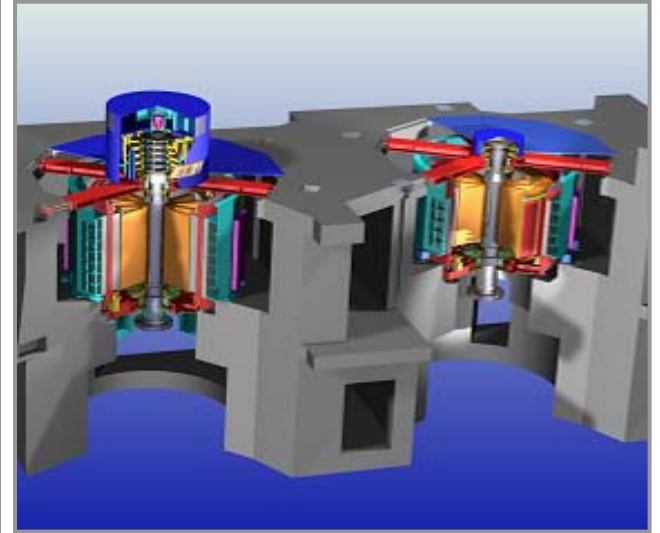
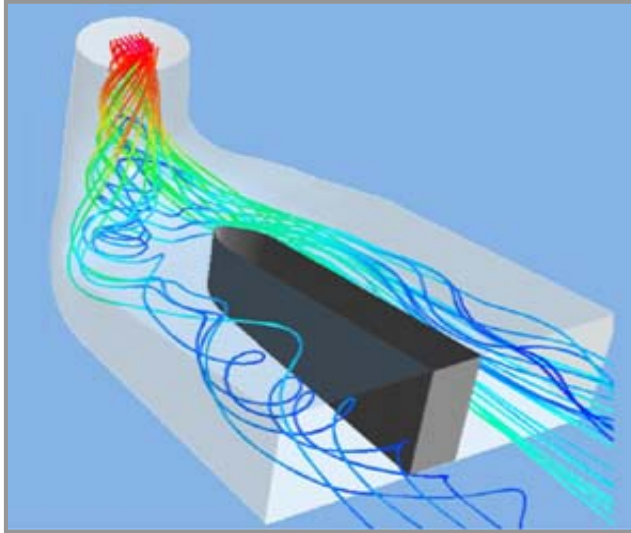
(Proforma figures for ANDRITZ HYDRO)

2010	
Order Intake:	1,870 MEUR
Sales:	1,579 MEUR
Order Backlog:	3,376 MEUR
Employees:	6,530

Our global Presence



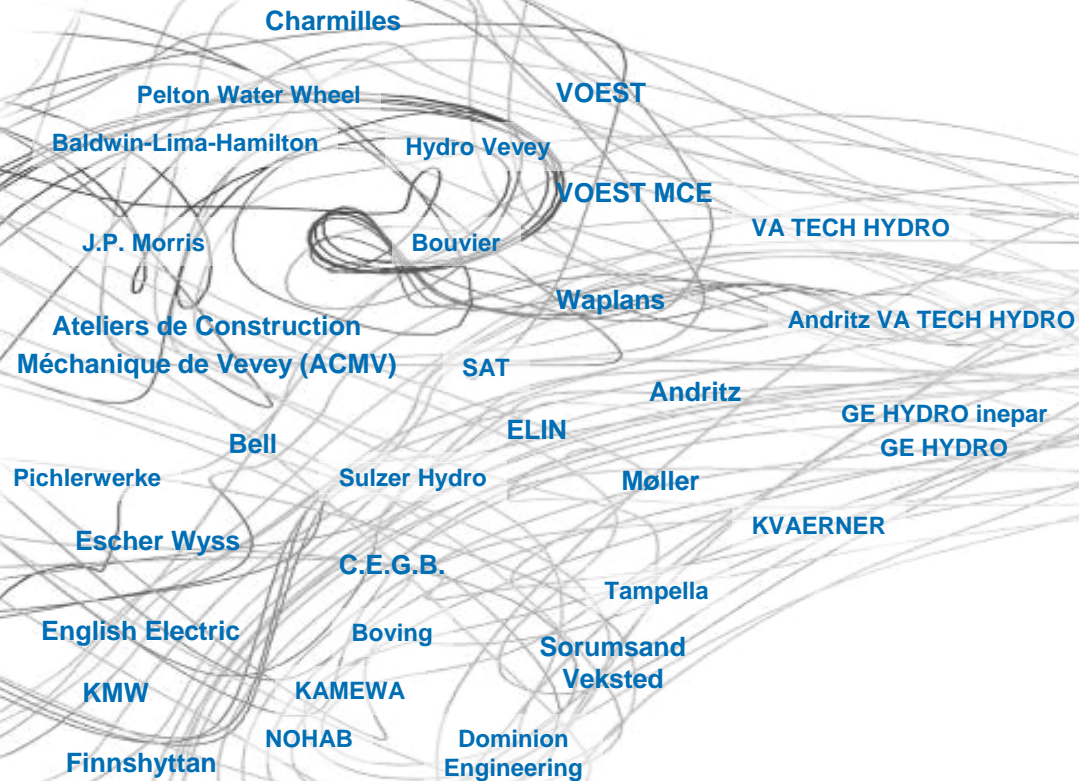
Our Experience



- More than 170 years of turbine experience
- Over 30,000 turbines (more than 400,000 MW) installed
- Over 120 years of experience in electrical equipment
- Complete range up to more than 800 MW
- Leading in Service & Rehabilitation
- World leader for Compact Hydro

Our History

More than 170 years of experience and knowledge
in the field of hydropower generation.



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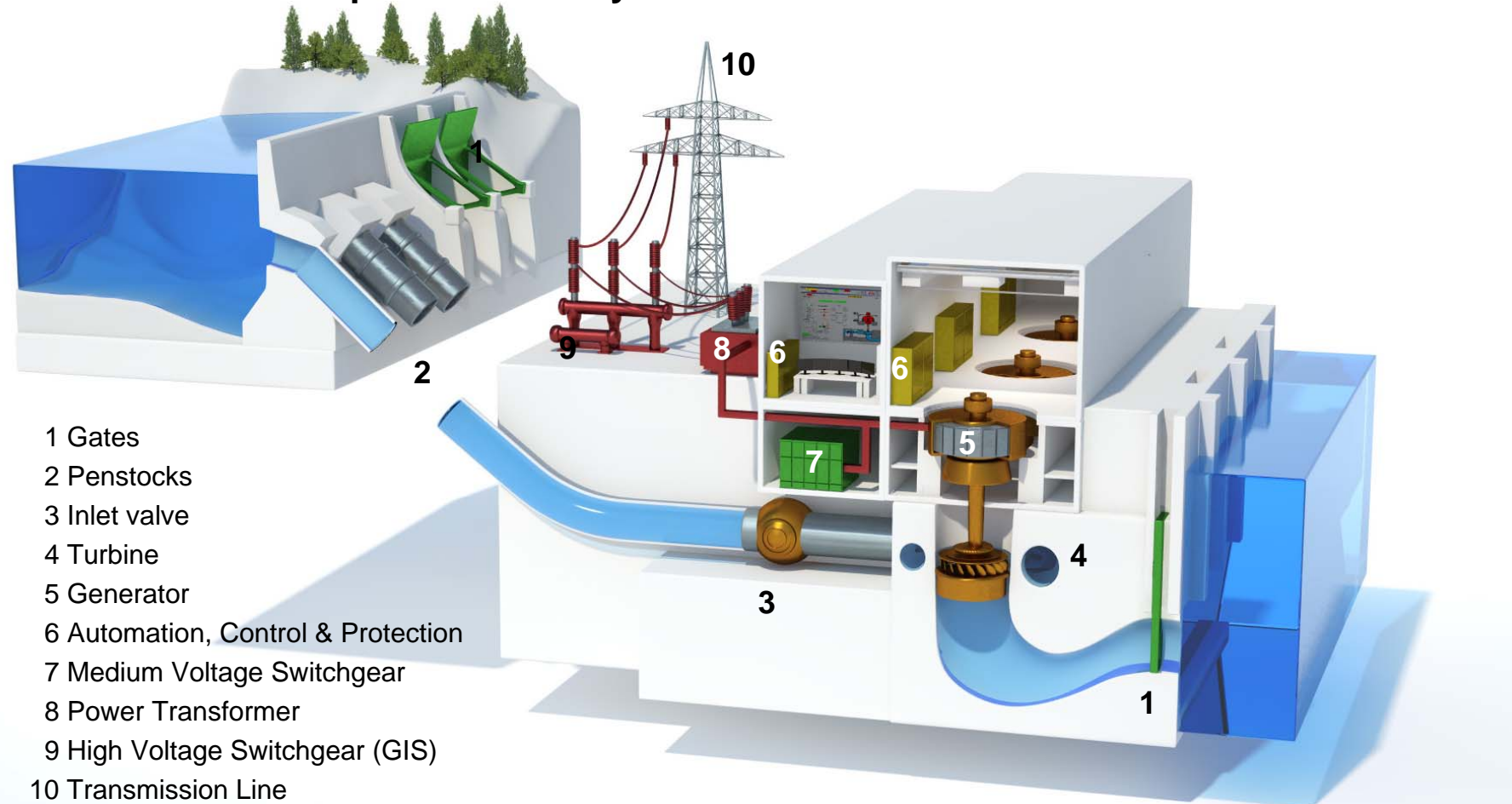


The pioneers created the foundation.

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From Water to Wire

Extensive know-how of products and systems - “From Water to Wire” within ANDRITZ HYDRO



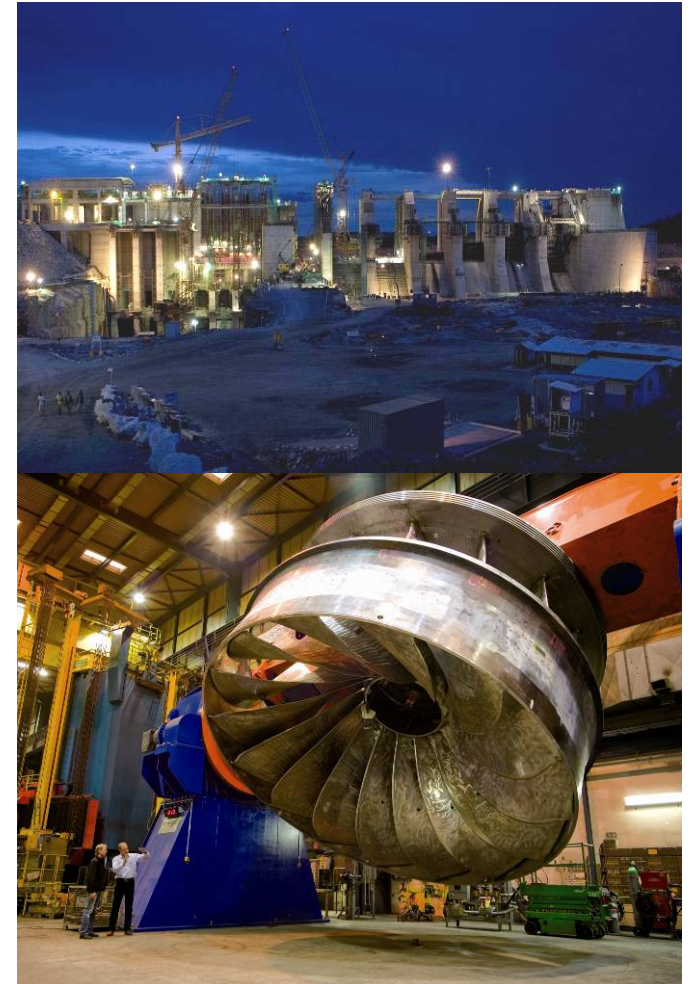
Hydro Power Plants

Large Hydro

Water to Wire supply / installation of Hydro power plants.

Scope:

- **Engineering, design, model testing, purchasing, manufacturing, assembly, project management, all mechanical and electrical equipment, monitoring and diagnosis systems**
- **Turbines, all types**
- **Digital speed governors**
- **Shut - off valves**
- **Generators and Excitation Systems**
- **Automation, control, protection and synchronization**
- **Site management, installation, commissioning, testing, training**
- **Large rehabilitation projects**



Hydro Mechanical Structures

Penstocks & Gates

All kinds of gates and penstocks for hydro power plants, water supply and irrigation projects.

Scope:

- **Design, engineering, project management, shop - and field fabrication, installation, testing, commissioning and rehabilitation**
- **Exposed and embedded penstocks**
- **Pipe bridges and steel tunnel linings**
- **Manifolds and bifurcations**
- **Radial gates, flap gates**
- **Intake and outlet equipment**
- **Bottom outlets ($H > 180$ m)**
- **Spillway and ship lock equipment**
- **Trash racks and raking equipment**
- **Hydraulic & mechanical hoists**
- **Automation, controls & auxiliary equipment**



Small Hydro Power

Compact Hydro

Products and services for small and medium hydro power plants up to 30 MW power output per unit.

Scope:

- Shorter periods for implementation
- Efficient power generation with environmental compatibility
- Full-liner for electromechanical equipment
- Modular design of turbine systems
- Delivery of components:
 - preassembled
 - checked
- short assembling and commissioning time
- ECO Bulb™ low head applications



Modernization

Service & Rehab

Solutions, Products and Services over the entire life cycle of the hydro power plant.

Scope:

- Plant assessment
- General overhaul / Rehabilitation
- Upgrading / Modernization
- Feasibility studies
- Residual life analysis
- Risk assessment
- Maintenance contracts
- Spare parts management
- Fault analysis and troubleshooting
- Online Monitoring- & Diagnosis Systems
 - DIA TECH
- Training services
- Service technicians



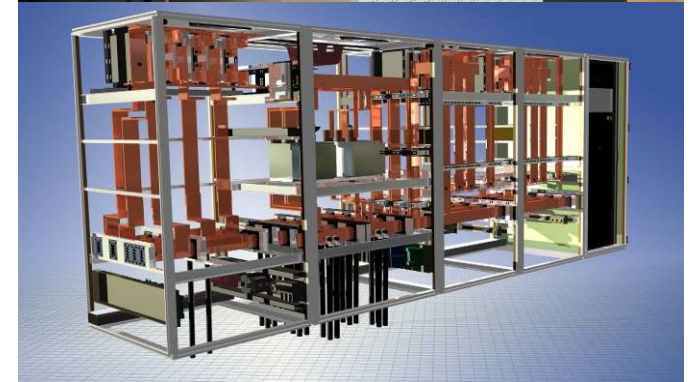
Secondary Equipment

Automation

Solution provider for secondary equipment and services for hydro power plants.

Scope:

- **Integrated hydro power plant control system NEPTUN**
- **Highly specialized Products:**
 - **SCADA Systems**
 - from display up to regional dispatch center
 - **Excitation**
 - static excitation or with exciter unit
 - **Electrical protection**
 - Unit, Field, Line, Busbar
 - **Synchronizing**
- **Design, documentation, engineering, site management, installation, commissioning, test, maintenance & service**
- **Consulting and Training**



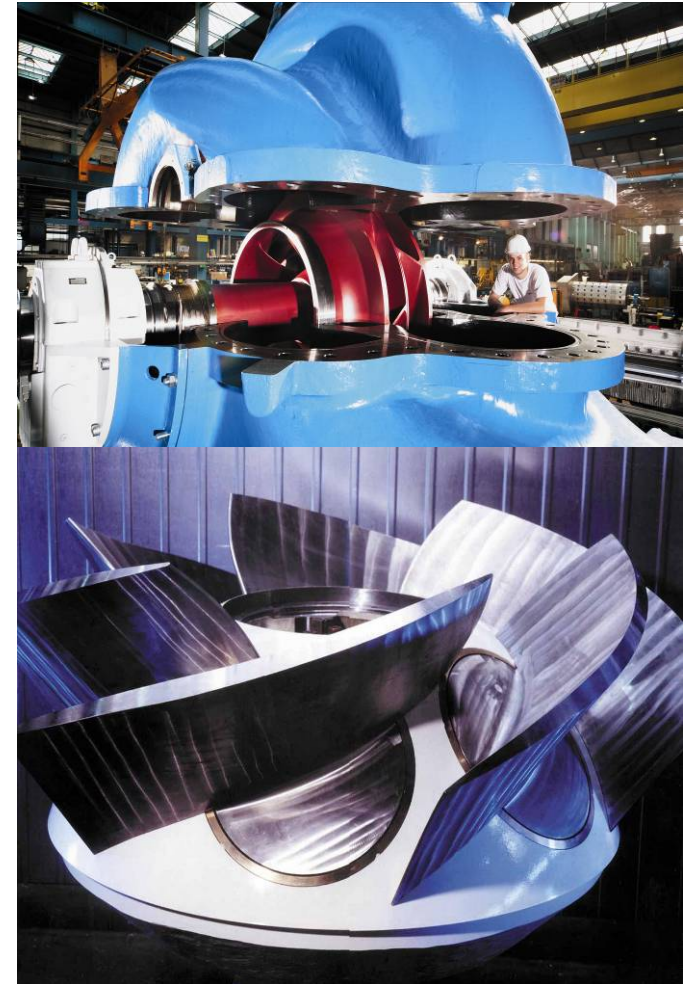
Hydro and Process Pumps

Pumps

Standard and large pumps for water transport, for energy supply, pulp and paper industry and chemical and food industry.

Scope:

- Irrigation pumps
- Drinking water pumps
- Industrial water supply pumps
- Cooling water pumps
- Main coolant pumps
- Flue gas desulphurization
- Process pumps
- Fan pumps
- Medium-consistency pumps



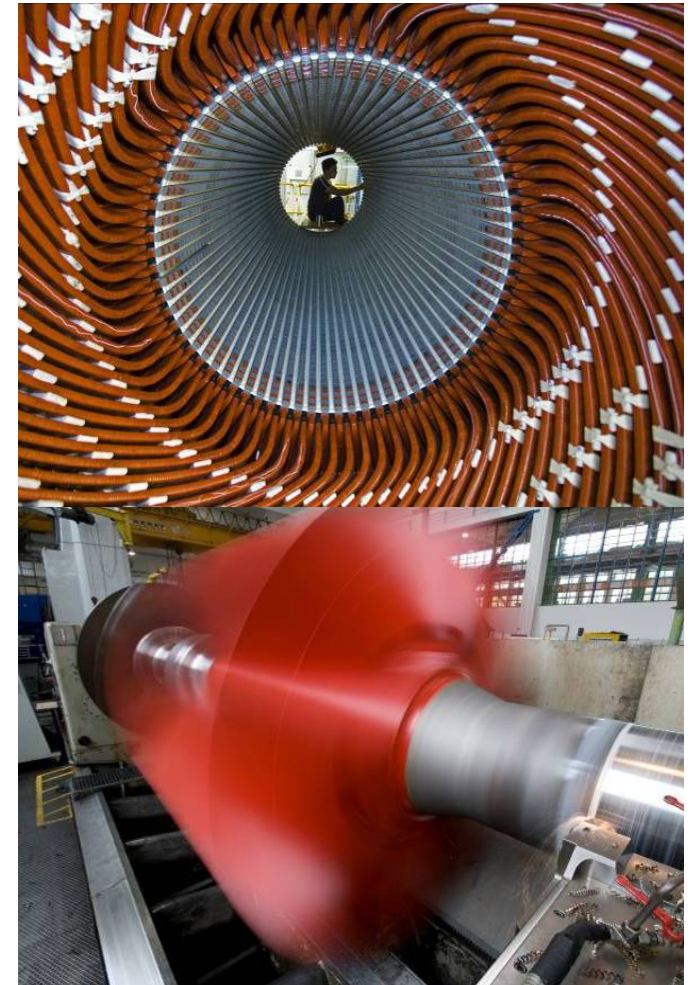
Gas and Steam Turbine Generators

Generator Turbo

Design, manufacturing and installation of Turbo generators.

Scope:

- 20 up to 350 MVA
- Turbo generators
- Steam turbine generators
- Monitoring and Diagnosis systems



New field of activity

Tidal Current Energy and Hammerfest Strøm

▪ Hammerfest Strøm AS

- One of the world's leading companies in development of technology for power generation from tidal currents occurring in coastal waters.
- Locations:
 - Hammerfest, Norway - headquarter
 - Glasgow, Scotland – subsidiary

▪ History

- 1996 – founding in Hammerfest
- 2003 – world's first tidal current 300kW turbine in Kvalsundet (near Hammerfest)

▪ Shareholders

- ANDRITZ HYDRO
- Statoil New Hydro
- Hammerfest Energi
- Iberdrola (ScottishPower Renewables)
- other North Norwegian shareholders

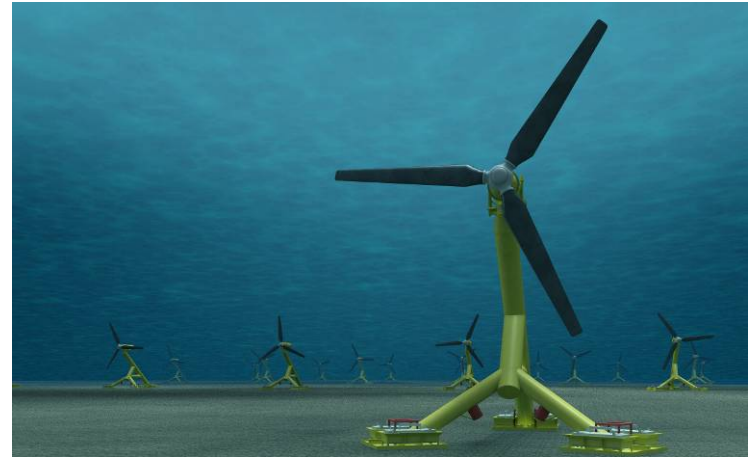


Tidal Current Energy

Hammerfest Strøm – Product portfolio

▪ General

- 3 bladed horizontal axis tidal turbine
- adjustable propeller
- Grounding Tripod-substructure grounding with ballast weights
- asynchronous generator with gear
- typical application:
 - medium up to deep water
 - medium water flow speed



▪ HS300 (300kW)

- proven technology and in operation since 2003
- Unit power: 300 kW (316 at turbine)
- Diameter: 20 m
- Depth: ~50 m
- Flow: up to 2.5 m/s
- 25 year lifetime, 3 years maintenance interval
- Weights:
 - Nacelle and turbine: ~ 70 tonnes
 - Substructure : ~110 tonnes
 - Ballast weights: ~200 tonnes

▪ HS1000 (1MW)

- new development and based on HS300
- Unit power: 1 MW
- Diameter: 21 m
- Depth: ~50 m
- Flow: up to 4.0 m/s

Quality

IQNet
THE INTERNATIONAL CERTIFICATION NETWORK
CERTIFICATE

IQNet and Quality Austria
hereby certify that the organization
ANDRITZ HYDRO Group
Headquarter: Persingstrasse 76, 1141 Vienna
Research and development, industrial, plant engineering, construction, installation,
commissioning, plant management, and service of hydropower plants and components.
Development and supply of hydropower plants and components.
Design and technical service and equipment for hydropower plants.
Construction, operation, maintenance and supply of hydropower plants and components.
Systems and products for protection, automation, instrumentation, and control.
ISO 9001:2000
has implemented and maintains a
QUALITY MANAGEMENT SYSTEM
which fulfils the requirements of the following standard
ISO 9001:2000
Issued on: 2009-02-08
Validity date: 2011-10-31
Registration Number: AT-07389/1
Signatures removed for security reasons
Rüdiger Storz
President of IQNet
Walter Storz
General Manager
qualityaustria

qualityaustria
Succeeded with Quality
CERTIFICATE

Quality Austria Training, Certification and Evaluation Ltd.
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Valid until: 31 October 2011
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General Manager
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**All operational Divisions and Subsidiaries are certified
according to the ISO 9001 Standard**

Quality you can rely on!

